FCC Katrina PanelEB Docket 06-119

Submitted by: Michael C. Candell, private citizen; August 7, 2006

GROL PG-20-3278; Amateur radio W7KBW

Distinguished Ladies and Gentlemen and members of the panel:

As we are all aware, the events of the 2005 hurricane season were devastating on many levels. I will not fill the record with a re-telling of the facts. I will however, attempt to address the concerns of the Commission and the panel, in regards to a methodology for the mass-alerting of the US population, during local and national emergencies.

Over the past decades, the American public has become accustomed to the instant connection and communication that, television, broadcast radio and the Internet and cellular telephones afford the individual. For some, daily life without these means of communication is unbearable or intolerable. The benefits of these technologies are numerous. Affordable, available and easy to use technology allows the average American citizen to view news and sporting events thousands of miles away. The same technology, also allows them to access information and research facilities half a world away. Information that at one time would have only been accessible by a long journey and co-ordination of visits. However, for all their wonder, promise and ease of use; these technologies are reliant on somewhat fragile infrastructures; commercial electric power grids and point to point telephone or data circuits.

As the tropical storms of 2005 tore through the Gulf coast states, the commercial power grids and cables of the Public Switched Telephone Network, (PSTN) were destroyed like a house of cards. The loss of commercial AC power and telephone connectivity back to telephone company central offices and Mobile Telephone Switching Office, (MTSO), rendered the cable TV systems, broadband internet connections and cellular telephones virtually useless. The cellular sites with AC power and connectivity were quickly overwhelmed by public servants, private citizens and news media all attempting to use a limited resource to gain or relay information. A means to relay information to personnel in the affected areas was needed.

Surprisingly, the pager; a device that some consider to be out dated and quaint proved to be invaluable in the transmission of information to the hundreds of rescue workers and public servants giving aide in the Gulf coast states. In a similar fashion, in the aftermath of the September 11, 2001

attacks on the World Trade Center, two-way paging proved to be invaluable for those involved in rescue and security efforts. At that time I was employed by SkyTel Communications. I was personally told by a senior US Customs agent –

"Pagers were the only means of communication we could rely on for three whole days"

It is for that reason and my personal experience in the design and construction of paging networks; I advocate the implementation of a nationwide alerting system utilizing paging technology.

There have been numerous mass-alerting schemes attempted in the past. CONELRAD, EBS, DIDS, NAWAS and EAS. Along with the proposed PERKI network. Each one of these systems relied on the message being sent from a central location to regional and then local broadcast facilities and finally to the local population. Either through misunderstanding of use, exorbitant cost to deploy, lack of mandate or public availability of equipment; each of these systems has failed in its promise to reliably alert the public. There are situations in which the EBS and EAS systems have functioned as designed, but, those, to my knowledge have been in local or countywide weather emergencies.

Paging networks are composed of several independent radio transmitters, each operating on the same frequency. Typically these radios transmit their signals at 250 to 500 watts peak power, in an omni-directional pattern. Cellular sites transmit in directional patterns on many different frequencies, at power levels of 100 watts. Both technologies use digital modes to transmit data. However the paging technology is optimized for the rapid transmission of text and numeric data. Cellular technology is optimized for single channel voice or data communication under ideal conditions. Because the entire network of paging radios is sending the same message the message has a higher chance of being received because more than one radio is sending it. Paging technology also has a feature called "group-call"; a method where-by several devices can have the same digital address; and each may be alerted at the same time, with the same message. This is the same technology used by the National Weather Service (NWS); Specific Area Messaging Encoder, (SAME) weather alerting radios. Paging networks are often linked to the central office by a satellite link as opposed to wireline or telephone circuits as are cellular networks. The satellite uplink is often at a remote location far removed from the disaster area. The lack of wireline connectivity in this case is a benefit to paging. When central office facilities or PSTN wire paths are compromised the paging transmitter will still continue to operate, provided there is adequate commercial power.

In the advent of Katrina, Rita and Wilma both paging and cellular carriers are installing back-up AC generators at their transmitting sites. Paging carriers such as SkyTel own several portable generators and transmitters that can be deployed on an as-needed basis until commercial power is restored.

A nationwide public alert system, utilizing paging technology and the "group call" feature has the benefit of being easy to deploy, maintain and use. Battery operated, Public Emergency Radios, similar to the ones proposed in the PERKI system, but capable of receiving messages on several frequencies can easily be manufactured using current "off-the-shelf" technology. This receiver would ideally be able to receive commercial VHF, UHF and 900 MHz paging signals and SAME codes from NWS transmitters. The receiver would *scan* through each frequency looking for the alert signal. A four to six line LCD display would display information regarding evacuations and shelter etc.

The alerting system could operate in a manner similar to this:

Tornado spotted in Smith County near Highway 4.

FEMA or other state / local agency activates emergency operations plan.

Agency sends text message "Tornado spotted in Smith County near Highway 4. All persons should seek shelter immediately. Wilson HS is a designated shelter."

This message would be sent from the FEMA or local government to each paging carrier and the NWS transmitters in the affected area. The message is then transmitted to the Personal Emergency Receivers in Smith County. If the emergency condition affects a larger area alerts would be sent to receivers in those areas.

The message from FEMA could be sent via internet connection, satellite signal or modem. Utilizing several different carriers and the NWS transmitter network a significant portion of the population in a geographic area can be alerted very quickly. This would eliminate the weak link encountered in EBS and EAS, of one station failing to alert other stations down the line.

Paging systems are often designed to serve large areas, often areas having small pockets of population; that may not be served by cellular carriers or cable TV. NWS is currently expanding its VHF transmitter network in hopes of serving the majority of the United States population. Local paging companies have constructed systems using VHF, UHF and 900 MHz channels. Often these systems use frequencies that perform best in their specific urban or suburban area. Properly designed radio systems can reach receivers in sub-basements of office buildings, or hilly outdoor areas. There is *no one best* frequency to use. A receiver capable of receiving and scanning through many frequencies would be very versatile and perform well under adverse conditions.

Should the Commission so choose, SAME encoding or paging technology for nationwide alerting could be mandated to be incorporated into various consumer electronic products. i.e.: automobile radios, Television tuners, set top boxes, satellite TRVO systems, commercial electronic billboards and overhead traffic signs. Previous mandates for technology inclusion include UHF tuners for televisions sets and the "v-chip".

Thank You for your consideration.